

Find the slope of the line

1.) joining  $A(2,7)$  and  $B(-3,-12)$

2.)  $y = 4x - 3$

3.) Perpendicular to  $6x + 9y - 12 = 3$

4.) Parallel to  $-y = -4x + 7$

Determine the Equation of the Line

1.) slope of 4, y-int of 3

2.) through  $(2,7)$  and  $(0,12)$

3.) horizontal through  $(5,4)$

4.) vertical through  $(3,7)$

Factor:

1.)  $6m^2 - 7m - 20$

2.)  $2y^2 - 4y - 96$

3.)  $6x^2 + 19x - 7$

Factor:

1.)  $x^2 + 3x + 2$

2.)  $x^2 + 9x + 20$

3.)  $x^2 - 5x - 6$

4.)  $x^2 - x + 2$

Difference of Squares

$$(a+b)(a-b) = a^2 - b^2$$

Use D.o.S. to simplify:

1.)  $(a+\sqrt{b})(a-\sqrt{b})$     2.)  $(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b})$

3.)  $(\sqrt{a}+b\sqrt{c})(\sqrt{a}-b\sqrt{c})$

## Radicals

$$\sqrt{a} \cdot \sqrt{a} = a$$

$$(\sqrt{a})^n = a$$

$$\sqrt[n]{a^m} = a^{\frac{m}{n}} = (\sqrt[n]{a})^m$$

## Questions:

1.)  $\sqrt{3} \cdot \sqrt{3} \cdot \sqrt{9}^3$

2.)  $\sqrt{7} \cdot \sqrt{7} \cdot \sqrt{49} \cdot 7$

3.)  $(\sqrt{5})^3$

4.)  $(\sqrt[3]{7})^5$

5.)  $\sqrt[3]{125}$

## Conjugate Radicals

$$a + \sqrt{b} \Leftrightarrow a - \sqrt{b}$$

State the  
Conjugate of...

$$\sqrt{a} + \sqrt{b} \Leftrightarrow \sqrt{a} - \sqrt{b}$$

1.)  $2 + \sqrt{3}$

2.)  $\sqrt{2} - \sqrt{3}$

3.)  $\sqrt{3} + 2\sqrt{5}$

4.)  $2\sqrt{5} + 3\sqrt{7}$

5.)  $6\sqrt{7} - 4\sqrt{3}$

$$\sqrt{a} + b\sqrt{c} \Leftrightarrow \sqrt{a} - b\sqrt{c}$$

$$a\sqrt{b} + c\sqrt{d} \Leftrightarrow a\sqrt{b} - c\sqrt{d}$$

## Rationalizing Denominators 1

$$\frac{a}{b\sqrt{c}} = \frac{a}{b\sqrt{c}} \cdot \frac{\sqrt{c}}{\sqrt{c}} = \frac{a\sqrt{c}}{bc}$$

Try:

1.)  $\frac{2}{3\sqrt{5}}$

2.)  $\frac{7}{9\sqrt{2}}$

3.)  $\frac{x}{y\sqrt{a}}$

4.)  $\frac{12\sqrt{3}}{5\sqrt{2}}$

## Rationalize Your Denominator

\* multiply numerator & denominator by  
conjugate

$$a + \sqrt{b} \Leftrightarrow a - \sqrt{b}$$

Rationalize:

1.)  $\frac{3}{1 - \sqrt{2}}$

2.)  $\frac{4}{2 + 3\sqrt{5}}$

3.)  $\frac{2}{\sqrt{3} - \sqrt{6}}$

## Rationalize the Numerator:

\* multiply numerator and denominator by  
conjugate

$$a + \sqrt{b} \Leftrightarrow a - \sqrt{b}$$

Rationalize the numerator:

1.)  $\frac{\sqrt{5} - \sqrt{3}}{\sqrt{2} - 1}$

2.)  $\frac{\sqrt{7} - 3}{2}$

3.)  $\frac{\sqrt{8} - \sqrt{3}}{4}$